

# HC49/4H & HC49/3H CRYSTALS

ISSUE 9; 18 OCTOBER 1999

Outline in mm (inches) - HC49/4H & HC49/4H-3L

## Delivery Options

- Common frequencies are available from stock. Please see p4 for details

## Holder Style

- HC49/4H & HC49/3H crystals are resistance welded, hermetically sealed in an inert atmosphere with glass to metal seals securing the lead wires.
- Holders suffixed '-3L' have a centre third wire which grounds the case

## General Specifications

- Load Capacitance ( $C_L$ ): 10pF to 75pF or Series
- Drive Level: 500 $\mu$ W max.
- Static Capacitance ( $C_0$ ): 7pF max.
- Ageing:  $\pm 3$ ppm typical per year

## Standard Frequency Tolerances and Stabilities

- $\pm 10$ ppm,  $\pm 20$ ppm,  $\pm 30$ ppm,  $\pm 50$ ppm,  $\pm 100$ ppm

## Operating Temperature Ranges

- 0 to 50°C      -30 to 80°C
- 10 to 60°C    -40 to 90°C
- 20 to 70°C    -55 to 105°C

## Storage Temperature Range

- 55 to 125°C

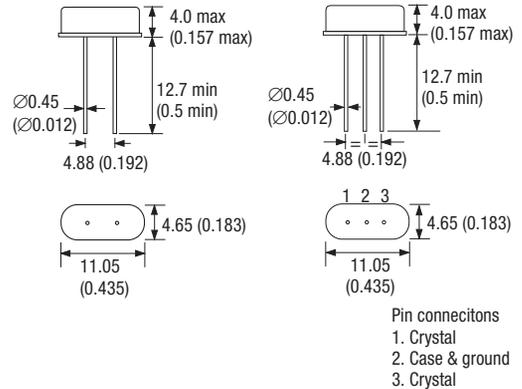
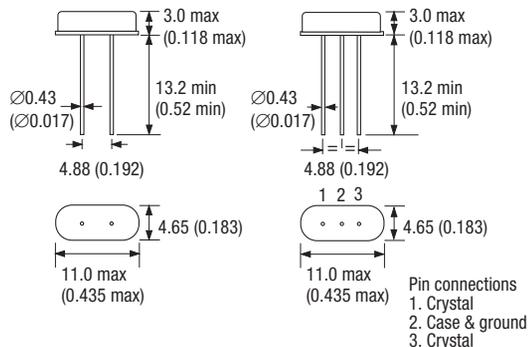
## Environmental Specification

- Shock: 981m/s<sup>2</sup> for 6ms, three shocks in each direction along three mutually perpendicular planes
- Vibration: 10 to 60Hz 0.75mm displacement, 60 to 500Hz 98.1m/s<sup>2</sup> acceleration, 30 minutes in each of three mutually perpendicular planes

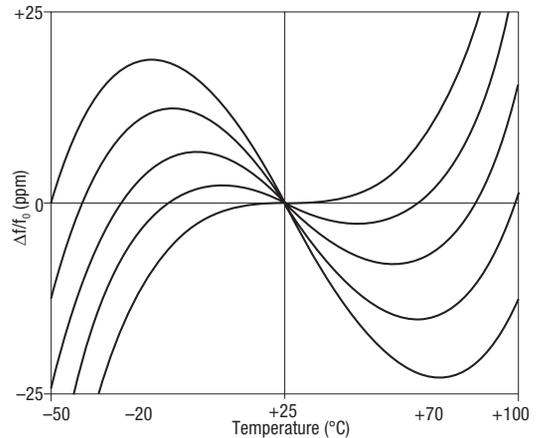
## Marking

- Frequency only

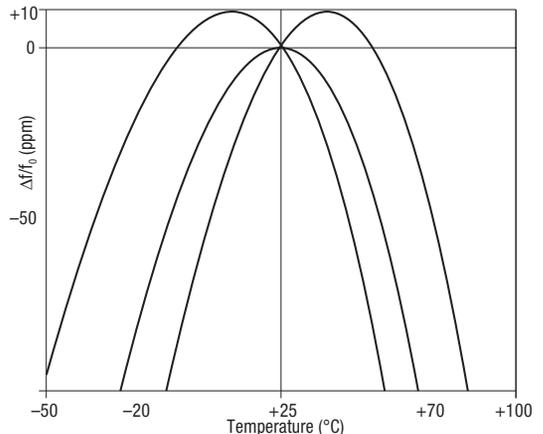
## Outline in mm (inches) - HC49/3H & HC49/3H-3L



## Typical Frequency vs Temperature Curves for various angles of AT-cut crystals



## Typical Frequency vs Temperature Curves for various angles of BT-cut crystals



### Minimum Order Information Required

- Frequency + Holder + Frequency Tolerance @ 25°C + Frequency Stability + Operating Temperature Range + Circuit Condition + Overtone Order

### Electrical Specification – maximum limiting values

Frequency Range	Frequency Tolerance @ 25°C ±2°C	Operating Temperature Range	Frequency Stability Available Over Operating Temperature		ESR max.	Vibration Mode
			Minimum	Maximum		
3.50 to < 5.0MHz	±15ppm to ±100ppm	0 to 50°C	±15ppm	±100ppm	200Ω	Fundamental AT cut
		-10 to 60°C	±20ppm	±100ppm		
		-20 to 70°C	±20ppm	±100ppm		
		-30 to 80°C	±25ppm	±100ppm		
		-40 to 90°C	±30ppm	±100ppm		
		-55 to 105°C	±100ppm	±500ppm		
5.0 to < 8.0MHz	±15ppm to ±100ppm	0 to 50°C	±15ppm	±100ppm	120Ω	Fundamental AT cut
		-10 to 60°C	±20ppm	±100ppm		
		-20 to 70°C	±20ppm	±100ppm		
		-30 to 80°C	±25ppm	±100ppm		
		-40 to 90°C	±30ppm	±100ppm		
		-55 to 105°C	±100ppm	±500ppm		
8.0 to < 12.0MHz	±15ppm to ±100ppm	0 to 50°C	±10ppm	±100ppm	70Ω	Fundamental AT cut
		-10 to 60°C	±15ppm	±100ppm		
		-20 to 70°C	±15ppm	±100ppm		
		-30 to 80°C	±20ppm	±100ppm		
		-40 to 90°C	±50ppm	±100ppm		
		-55 to 105°C	±50ppm	±100ppm		
12.0 to < 25.0MHz	±15ppm to ±100ppm	0 to 50°C	±10ppm	±100ppm	50Ω	Fundamental AT cut
		-10 to 60°C	±15ppm	±100ppm		
		-20 to 70°C	±15ppm	±100ppm		
		-30 to 80°C	±20ppm	±100ppm		
		-40 to 90°C	±50ppm	±100ppm		
		-55 to 105°C	±50ppm	±100ppm		
25.0 to 32.0MHz	±15ppm to ±100ppm	0 to 50°C	±10ppm	±100ppm	30Ω	Fundamental AT cut
		-10 to 60°C	±15ppm	±100ppm		
		-20 to 70°C	±15ppm	±100ppm		
		-30 to 80°C	±20ppm	±100ppm		
		-40 to 90°C	±50ppm	±100ppm		
		-55 to 105°C	±50ppm	±100ppm		
20.0 to 40.0MHz	Inclusive with Frequency Stability	0 to 50°C	±50ppm	±100ppm	50Ω	Fundamental BT cut
		-10 to 60°C	±50ppm	±100ppm		
		-20 to 70°C	±100ppm	±100ppm		
		-30 to 80°C	±100ppm	±100ppm		
25.0 to 70.0MHz	±15ppm to ±100ppm	0 to 50°C	±15ppm	±100ppm	100Ω	3rd Overtone AT cut
		-10 to 60°C	±20ppm	±100ppm		
		-20 to 70°C	±20ppm	±100ppm		
		-30 to 80°C	±25ppm	±100ppm		
		-40 to 90°C	±50ppm	±100ppm		
		-55 to 105°C	±50ppm	±100ppm		

Please Note: Frequencies 3.0 to 3.5MHz are available; please contact the sales office for more information.

QUARTZ CRYSTALS